

WHAT IS CLAIMED IS:

1. An electrical connector, mountable to a substrate and comprising:
a housing;
a surface mount contact secured to said housing and adapted to surface mount to the substrate; and
a non-surface mount hold down secured to said housing and adapted to mount to the substrate.
2. The electrical connector as recited in claim 1, wherein said surface mount contact includes a fusible element.
3. The electrical connector as recited in claim 2, wherein said fusible element is a solder ball.
4. The electrical connector as recited in claim 1, wherein said electrical connector is constructed such that it remains substantially parallel when mounted to the substrate.
5. The electrical connector as recited in claim 1, wherein a plurality of said surface mount contacts form a matrix array.
6. The electrical connector as recited in claim 1, further comprising a standoff secured to said housing, wherein said standoff is adapted to retain said housing a distance from a surface of the substrate or to limit flattening of a solder joint between said surface mount contact and the substrate.
7. The electrical connector as recited in claim 6, wherein said standoff is part of said hold-down.

8. The electrical connector as recited in claim 1, wherein said non-surface mount hold down is a post extending outwardly from said housing and is adapted to enter a hole in the substrate.

9. A ball grid array connector mountable to a substrate, comprising:
a housing;
a plurality of contacts within said housing;
a plurality of fusible elements secured to said contacts for mounting said connector to the substrate; and
a hold down adapted to enter the substrate, wherein said hold down is secured to said housing.

10. The ball grid array connector as recited in claim 9, further comprising a standoff extending from said housing and adapted to retain said housing a distance from a surface of the substrate or to limit flattening of said fusible elements during reflow.

11. The ball grid array connector as recited in claim 10, wherein said standoff is part of said hold-down.

12. The ball grid array connector as recited in claim 9, wherein said fusible elements are solder balls.

13. The ball grid array connector as recited in claim 9, wherein said ball grid array connector is constructed such that it remains substantially parallel when mounted to the substrate.

14. The ball grid array connector as recited in claim 9, wherein said hold down is a post extending outwardly from said housing.

15. A method of mounting an electrical connector to a substrate, comprising:

sub.
A10
con'd.

providing an electrical connector having a contact and a hold down;
providing a substrate;
securing said contact to said substrate;
placing said hold down into said substrate; and
securing said hold down to said substrate.

16. The method as recited in claim 15, wherein said securing comprises soldering said hold down to said substrate.

sub.
A11

17. The method as recited in claim 15, further comprising constructing said electrical connector such that it remains substantially parallel when mounted to said substrate.

18. The method as recited in claim 15, further comprising balancing said electrical connector on said substrate such that said electrical connector remains substantially parallel to said substrate during said securing.

19. The method as recited in claim 15, wherein said electrical connector is a ball grid array connector.

20. The method as recited in claim 15, wherein said securing said contact occurs before said securing said hold down.

21. A method of preventing the skewing of an electrical connector when being mounted to a substrate, comprising:

providing an electrical connector having a first part with a mass greater than a second part; and

balancing said first and second parts of said electrical connector such that said electrical connector remains substantially parallel to said substrate when mounting to the substrate.

22. The method of claim 21, wherein said balancing comprises removing material from said first part of said electrical connector.

23. The method of claim 21, wherein said balancing comprises adding material to said second part of said electrical connector.

24. The method of claim 21, wherein said connector is a ball grid array connector.

25. An electrical connector mountable to a substrate, comprising:
a housing having a mounting end facing the substrate;
a plurality of contacts secured to said housing;
a plurality of fusible elements, each secured to a respective one of said plurality of contacts; and
a standoff extending a distance from said mounting end of said housing;
wherein said distance is selected to limit flattening of said fusible elements during reflow.

26. The electrical connector as recited in claim 25, wherein said distance is selected to prevent bridging between adjacent fusible elements.

27. The electrical connector as recited in claim 25, wherein said fusible elements are solder balls.

28. The electrical connector as recited in claim 25, wherein said standoff allows partial flattening of said fusible elements.

29. The electrical connector as recited in claim 28, wherein said distance allows up to approximately 40 percent flattening.

cited in
tening.

113

Add
A4

ADD 7
DZ

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100